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EXAMINER
LU, CHARLES EDWARD

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2163	

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/624,278	MACLENNAN ET AL.
	Examiner	Art Unit	
	Charles E. Lu	2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>22 July 2003</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-35</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-35</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>22 July 2003</u> is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

    1. ☐ Certified copies of the priority documents have been received.

    2. ☐ Certified copies of the priority documents have been received in Application No. _____.

    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>8/30/2004</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-35 have been submitted for examination.

2. Claims 1-35 have been rejected.

Drawings

3. The drawings are objected to because of the following informalities:

As to fig. 2, the text "mining model 220b" on the right of the drawing appears to be smeared.

As to fig. 3, #320, the sentence appears to be incomplete.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features from at least claims 2-5 (creation operation data, continuous and discrete variables, discretization, sub-ranges), 8-11, 13 (application programming interface), 14-17, 19 (API), 21-24, 27 (connection data), 28 (drill through query), 30 (first class object), 32, 33, and 35 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The specification is objected to because of the following informalities:

The title of the invention is neither precise nor descriptive. A new title is required which should include, using twenty words or fewer, claimed features that differentiate the invention from the prior art. It is recommended that the title should reflect the gist of or the improvement of the present invention.

In the specification there does not appear to be clear antecedent basis for the phrase "computer readable medium."

Appropriate corrections are required.

Claim Objections

5. Claims 1-35 are objected to because of the following informalities:

Generally for claims 1-35, the word "where" should be changed to <u>wherein</u>

where necessary (e.g., claim 2, line 1, claim 3, line 1, etc).

As to claim 16, line 1, "interfaceof" should be changed to <u>interface of</u>.

Appropriate corrections are required.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
conditions and requirements of this title.

7. **Claims 7-25, and 31-35 are rejected under 35 U.S.C. 101 because the
claimed invention is directed to non-statutory subject matter.**

As to claims 7 and 31, in view of the specification objection above, the

computer readable medium appears to be intended to cover not only storage media, but

also propagation media (e.g., signals), not currently believed to fall within a statutory

category of invention.

Claims 8-12 and 32-35 are rejected under 35 U.S.C. 101 because of their

dependency on rejected claims 7 and 31 and their failure to cure the deficiencies of

claims 7 and 31.

As to claim 13, the claimed application programming interface is reasonably

interpreted as software. Therefore, the claim is software per se, and non-statutory.

Claims 14-18 are rejected under 35 U.S.C. 101 because of their dependency on

rejected claim 13 and their failure to cure the deficiencies of claim 13.

As to claim 19, in view of the specification and claim 31, the "database"

limitation is reasonably interpreted as being software, per se. Therefore, all the

elements of claim 19 are reasonably interpreted as software, and claim 19 is non-

statutory.

As to claim 20, the various means, in view of claim 31, are reasonably

interpreted as software components. Therefore, all the elements of claim 20 are

reasonably interpreted as software, and claim 20 is non-statutory.

Claims 21-25 are rejected under 35 U.S.C. 101 because of their dependency on

rejected claim 20 and their failure to cure the deficiencies of claim 20.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 27 and 32 are rejected under 35 U.S.C. 112, first paragraph, as

failing to comply with the written description requirement. The claim(s) contains

subject matter, which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor(s), at the

time the application was filed, had possession of the claimed invention.

As to claim 27 and 32, the specification does not describe "storing connection

data indicating that the mining model has been trained on data from the mining

structure" in such a way as to reasonably convey to one skilled in the relevant art that

the inventor(s), at the time the application was filed, had possession of the claimed invention.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 13-16, 17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 13, there appears to be no limitations associated with the claimed application programming interface (API). The claim appears to be directed purely to intended use of an API.

Claims 14-16 are rejected based upon their dependency on rejected claim 13.

As to claim 17, line 1, there is insufficient antecedent basis for the limitation "said query." The above is interpreted to mean <u>a query</u>.

As to claim 19, line 11, it is unclear which data set is referred to by "said data set."

The broadest reasonable interpretation of the above terms in light of the specification has been given to the claims. Art rejection of the above claims is applied as best understood in light of the rejection under 35 U.S.C. 112, second paragraph, discussed above.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102

that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or
in public use or on sale in this country, more than one year prior to the date of application for
patent in the United States.

13. **Claims 1-12, 20-26, 28, 31, and 33 are rejected under 35 U.S.C. 102(b) as**

being anticipated by Becker (U.S. Patent 6,301,579).

As to claim 1, Becker teaches the following claimed subject matter:

At least one set of case data (mushroom data set, col. 10, ll. 30-31, or adult

census data set, col. 10, ll. 66-67), each of said sets of case data comprising a stored

value for at least one variable from among a set of at least one variable (e.g., variables

found in table of col. 11 for adult census);

Determining at least one mining structure variable from among said set of at least

one variable (see list of determined variables on the table in col. 11);

For each case, retrieving a stored value for each of said at least one mining

structure variables from said data set training data (e.g., col. 11, ll. 21-25, referring to

the table of col. 11, the first three attributes are from the data, therefore, a stored value

from the data set has to be retrieved);

Performing mining model initial processing on said retrieved values (col. 10, ll.

34-38, col. 11, ll. 20-28);

Storing the results of said mining model initial processing (e.g., in a configuration

file shown in the table of col. 11, and base table, col. 10, ll. 38-40, col. 11, ll. 42-50, col.

1, ll. 32-49, col. 1, ll. 32-42).

As to claim 2, Becker teaches wherein the step of determining at least one mining structure variable from among the set of at least one variable comprises accepting creation operation data comprising data comprising the identity of said mining structure variables (see the created variables in the table of col. 11).

As to claim 3, Becker teaches where the at least one mining structure variable comprises a continuous variable (e.g., gross income, table of col. 11), where the creation operation data comprises an indication regarding discretization of the continuous variable (enumeration definition), and where the step of performing mining model initial processing on said retrieved values comprises discretizing said continuous variable according to said indication (see the enumeration in the table of col. 11).

As to claim 4, Becker teaches where the indication comprises an indication of a number of buckets into which said continuous variable should be discretized (see the various enumerations and corresponding buckets in the table of col. 11).

As to claim 5, Becker teaches where the indication comprises an indication of sub-ranges into which said continuous variable should be discretized (see the various enumerations and corresponding buckets in the table of col. 11, especially "gross income").

As to claim 6, Becker teaches wherein the stored results are associated with at least one mining model, and wherein each of the at least one mining model is trained using said stored results (e.g., col. 6, ll. 64-66, col. 10, ll. 29-35, col. 11, ll. 45-50).

Claims 7-12 and 20-25 are drawn to a computer readable medium or system claiming the same invention as method claims 1-6. Therefore, claims 7-12 and 20-25

are rejected based upon the same reasoning as stated above in the rejection of claims
1-6.

Claim 26 is drawn to a method claiming the same invention as method claims 1
and 6. Therefore, claim 16 is rejected based upon the same reasoning as stated above
for claims 1 and 6.

As to claim 28, Becker teaches accepting a drill through query for specified data
from said mining structure and providing said specified data (fig. 9B, col. 8, ll. 25-30).
As seen in fig. 9B, a query has to be accepted to display the data.

Claims 31 and 33 are drawn to a computer readable medium claiming the same
invention as method claims 26 and 28. Therefore, claims 31 and 33 are rejected based
upon the same reasoning as claims 26 and 28.

Claim Rejections - 35 USC § 103

14. This application currently names joint inventors. In considering patentability
of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of
the various claims was commonly owned at the time any inventions covered therein
were made absent any evidence to the contrary. Applicant is advised of the obligation
under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was
not commonly owned at the time a later invention was made in order for the examiner to
consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)
prior art under 35 U.S.C. 103(a).

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 27, 29, 30, 32, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becker (U.S. Patent 6,301,579).

As to claim 27, Becker teaches training a mining model from a mining structure, as addressed above.

Becker does not expressly teach storing connection data indicating training.

However, Official Notice is taken that at the time the invention was made, it was conventional to store data to indicate that an action was performed on some data (e.g., a flag or indicator). This indicator is connection data because it connects the data with the action performed on the data.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Becker with the above teachings, such that connection data (e.g., flag) is stored when the mining model has been trained on data from the mining structure. The motivation would have been to increase user friendliness by allowing a user to know if data has/has not been processed yet, and to take an appropriate action depending on the value of the indicator.

As to claim 29, Becker does not expressly teach where additional mining

models are associated with said mining structure, and where said method further

comprises training each of said additional mining models using said stored results.

However, Becker teaches training a mining model using stored results, as

addressed above.

Additionally, it has been held that duplicating parts for a multiple effect is obvious.

In re Harza, 274 F.2d 669, 671, 124 USPQ 378, 380 (CCPA 1960). In this case,

training a single mining model using stored results is being duplicated to train two or

more mining models using the stored results.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Becker with the above teachings, such that

additional mining models are trained using the stored results. The motivation would

have been to provide data for backup purposes.

As to claim 30, Becker does not expressly teach where said mining structure is

treated as a first class object in a database.

However, Official notice is taken that at the time the invention was made, it was

conventional to treat objects in a database as first class.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Becker with the above teachings, such that the

data mining structure is treated as a first class object in a database. The motivation

would have been to enable persistency.

Claims 32, 34, and 35 are drawn to a computer readable medium claiming the same invention as method claims 27, 29, and 30. Therefore, claims 32, 34, and 35 are rejected based upon the same reasoning as claims 27, 29, and 30.

17. **Claims 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becker (U.S. Patent 6,301,579) in view of Hornick et al (U.S. Patent 6,865,573).**

Claim 13 is drawn to the same subject matter of claims 1 and 2, taught by Becker, in addition to an Application Programming Interface (API).

Becker does not expressly teach an API in connection with the subject matter of claims 1 and 2.

However, Hornick teaches a data mining API (col. 6, ll. 49-67).

Since Becker also teaches data mining, as addressed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Becker with the above teachings, such that an API of Hornick is used in connection with the data mining of Becker. The motivation would have been to support object oriented programming languages within a data mining system, as taught by Hornick (Abstract, ll. 1-8).

As to claim 14, Becker, as modified by Hornick, teaches where the at least one mining structure variable comprises a continuous variable (e.g., gross income, table of col. 11), where the creation operation data comprises an indication regarding discretization of the continuous variable (enumeration definition), and where the step of performing mining model initial processing on said retrieved values comprises

discretizing said continuous variable according to said indication (see the enumeration

in the table of col. 11).

As to claim 15, Becker, as modified by Hornick, teaches where the indication

comprises an indication of a number of buckets into which said continuous variable

should be discretized (see the various enumerations and corresponding buckets in the

table of col. 11).

As to claim 16, Becker, as modified by Hornick, teaches where the indication

comprises an indication of sub-ranges into which said continuous variable should be

discretized (see the various enumerations and corresponding buckets in the table of col.

11, especially "gross income").

As to claim 17, Becker, as modified by Hornick, teaches retrieving stored results

via a network (fig. 17, col. 27, ll. 3-55). A query has to be sent to retrieve the data.

As to claim 18, Becker, as modified by Hornick, teaches wherein the stored

results are associated with at least one mining model, and wherein each of the at least

one mining model is trained using said stored results (e.g., col. 6, ll. 64-66, col. 11, ll.

45-50).

Claim 19 is drawn to a system claiming the same invention as claim 13, as

addressed above with respect to the combination of Becker and Hornick, in addition to a

database for storing the training data, connected with the API, taught by Hornick (col. 2,

ll. 25-32), and returning the stored values to said application programming interface.

Becker and Hornick do not expressly disclose returning the stored values to said

application programming interface.

However, Hornick teaches an API that supports retrieval (returning) of data (col. 6, II. 55-67).

Since Becker teaches stored values, as addressed above, it would have been to one of ordinary skill in the art at the time the invention was made to modify Becker and Hornick with the above teachings, such that the API of Hornick supports retrieval of the stored values of Becker. The motivation would have been to support object oriented programming languages within a data mining system, as taught by Hornick (Abstract, II. 1-8).

Conclusion

18. The following prior art cited on the PTO-892 form, not relied upon, is considered pertinent to applicant's disclosure:

Pham et al, U.S. Patent 5,970,482, discloses a system for data mining using neuroagents.

Agrawal et al, U.S. Patent 6,230,151, discloses parallel classification for data mining in a shared memory multiprocessor system.

Agrawal et al, U.S. Patent 5,787,274, discloses a data mining method and system for generating a decision tree classifier based on a minimum description length and presorting of records.

Vishnubhotla et al, U.S. Patent 6,823,334 discloses a metadata system for managing data mining environments.

Vishnubhotla et al, U.S. Patent 6,636,860, discloses a method and system for data mining automation in domain-specific analytic applications.

Morimoto et al, U.S. Patent 5,983,222, discloses a method and apparatus for computing association rules for data mining in large database.

Rao et al, Pub. No. 2003/0120458, discloses patient data mining.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E. Lu whose telephone number is (571) 272-8594. The examiner can normally be reached on 8:30 - 5:00; M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

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